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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WU, DOROTHY

ART UNIT PAPER NUMBER

2615

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/263,842

Applicant(s)

TERASHITA, TAKAAKI

Examiner

Dorothy Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-38 is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. In response to the office's argument that gradation and density are comparable terms, the applicant has argued: "In the instant invention, the density conversion condition (for example a first LUT for density conversion is initially determined). Next, the gradation conversion condition (which includes the tone hardening or softening of highlight areas) is determined on the basis of the density conversion condition." While the applicant has further clarified his own lexicography, he has still redefined comparable terms in the art to mean different things, which constitutes a use of the terms that is repugnant to their known meanings.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6, 9-13, 15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, U.S. Patent 6,078,686.

Regarding claim 1, Kim teaches an image processing method of creating output image data for obtaining a reproduced image by executing image processing on digital image data, comprising: a step of determining at first a density conversion condition (image contrast performed by contrast enhancer **300**) for an image expressed by the digital image data, the

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density conversion condition being a first conversion function for density correction between the digital image data and the output image data (col. 4, lines 37-41); a step of determining next a gradation conversion condition for the image expressed by the digital image data on the basis of the density conversion condition (sharpness enhancement performed by local contrast enhancer **400**), the gradation conversion condition being a second conversion function for the density correction and gradation correction between the digital image data and the output image data (col. 4, lines 64-67); and a step of modifying the digital image data on the basis of the density conversion condition and the gradation conversion condition, thereby creating the output image data for obtaining the reproduced image (Fig. 1). The digital camera that obtains the digital image data is inherently taught.

Regarding claim 2, Kim teaches an image processing method of creating output image data for obtaining a reproduced image by executing image processing on digital image data, comprising: a step of separating the digital image data into density component data and color component data (col. 3, lines 57-61); a step of determining a density conversion condition (image contrast performed by contrast enhancer **300**) for converting a density of the density component data, the density conversion condition being a first conversion function for density correction between the density component data and a modified density component data (col. 4, lines 37-41); a step of determining a gradation conversion condition (sharpness enhancement performed by local contrast enhancer **400**) for converting a gradation of the digital image data on the basis of the density conversion condition, the gradation conversion condition being a second conversion function for the density correction and gradation correction between the density component data and the modified density component data (col. 4, lines 64-67); a step of modifying the density

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component data (luminance) in accordance with the density conversion condition and the gradation conversion condition (Fig. 1); and a step of synthesizing the modified density component data with the color component data (performed by color converter 600), thereby creating the output image data for obtaining the reproduced image (Fig. 1). The digital camera that obtains the digital image data is inherently taught.

Regarding claim 3, Kim teaches that the density conversion condition (image contrast performed by contrast enhancer 300) is determined based on a characteristic value of the image expressed by the digital image data (col. 4, lines 37-41, 57-59).

Regarding claim 4, Kim teaches that the characteristic value is a mean value of densities of the digital image data (col. 4, lines 57-59).

Regarding claim 6, Kim teaches the step of inputting a predetermined value (beta) (col. 5, lines 38-39; Fig. 1), and wherein the gradation conversion condition is so determined as to harden or soften a tone of the image expressed by the digital image data based on the predetermined value (col. 13, lines 33-50).

Regarding claim 9, Kim teaches that when the local contrast, which corresponds to the gradation conversion condition, is large, local contrast enhancement is bypassed (col. 13, lines 56-59), which reads on the gradation conversion condition having a lower limit value.

Regarding claims 10-13, 15, and 18, because the methods of claims 1-4, 6, and 9 are taught, the apparatuses corresponding to the methods are also taught.

3. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, U.S. Patent 6,078,686, in view of Asada, U.S. Patent 5,875,262.

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Regarding claim 5, Kim teaches an image processing method according to claim 3. See above. Kim does not teach that the characteristic value is a weighted mean value based on a weight coefficient determined by a color in each pixel of the digital image data. Asada discloses the calculation of a characteristic value of a weighted mean value based on a weight coefficient determined by a color in each pixel of the digital image data (col. 30, line 45-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the weighted mean value based on color disclosed by Asada with the image processing method disclosed by Kim to make a tone correction method whose density conversion condition is dependent upon color information in the digital image data. One of ordinary skill would be motivated to make this modification because the tone correction method would take color information specific to the image into account when modifying the density of the image.

Regarding claim 14, because the method of claim 5 is taught, the apparatus corresponding to the method is also taught.

4. Claims 7 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, U.S. Patent 6,078,686, in view of Kishida, U.S. Patent 5,287,418.

Regarding claim 7, Kim teaches the image processing method according to claim 1 or 2. See above. Kim does not teach the steps of displaying the image expressed by the digital image data on a display means and inputting an instruction from outside based on the displayed image, and wherein the density conversion condition is determined by the instruction inputted from outside based on the displayed image. Kishida teaches that an operator views the image expressed by the digital image data, thus indicating that the data is displayed on display means

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(col. 3, line 37). The operator may use a keyboard to select parameters that affect how the tone shall be corrected (col. 3, lines 48-54). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the practice of displaying the image on a display means and allowing an operator to determine which parameters shall be used to correct the image taught by Kishida with the method of Kim to make an image processing method that enhances both global and local contrast, and enables an operator to determine the extent of contrast used. One of ordinary skill would have been motivated to make such a modification to give the operator more control how the image quality.

Regarding claim 16, because the method of claim 7 is taught, the apparatus corresponding to the method is also taught.

5. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, U.S. Patent 6,078,686, in view of well-known prior art.

Regarding claim 8, Kim teaches the image processing method according to claim 1 or 2. See above. Kim does not teach that the gradation conversion condition is determined so that a brightest area of the reproduced image becomes white or comes to have a density approximate to the white. However, the office takes Official Notice that it is well-known in the art of image processing to process an image to have the widest dynamic range possible. Therefore, it would have been obvious to one of ordinary skill to alter the method of Kim so that the brightest area of the reproduced image becomes white or approximate to white.

Regarding claim 17, because the method of claim 8 is taught, the apparatus corresponding to the method is also taught.

*Allowable Subject Matter*

6. Claims 19-38 allowed.

The prior art does not teach an image processing method comprising the steps of: calculating a mean value of the digital image data; calculating an output AIM value of processed pieces of image data; determining a modification value for modifying the digital image data using the calculated mean value and the calculated output AIM value; creating a first conversion table for converting the digital image data using the modification value; creating a second conversion table for modifying the first conversion table; and generating processed image data by converting the digital image data using the second conversion table, thereby creating the reproduced image.

*Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ajewole et al, U.S. Patent 5,046,118, teaches the generation of a look-up table that transforms image data so that the average and variance of the output image density is equal to an average and variance that are determined from a statistical study of satisfactorily toned images.

Yamaguchi, U.S. Patent 5,875,021, teaches adjusting the brightness of an image so that its average density maps to a predetermined density.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dorothy Wu whose telephone number is 703-305-8412. The examiner can normally be reached on Monday-Friday, 9:00-5:00.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on 703-308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Dorothy Wu*

DW

February 4, 2004



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